

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/663,416	Confirmation No. 2714
Appellant	:	Bruce B. Randolph et al.	
Filed	:	September 16, 2003	
TC/A.U.	:	1793	
Examiner	:	James E. McDonough	

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REPLY BRIEF (37 C.F.R. § 41.41)

This Reply Brief is in furtherance of the Notice of Appeal, filed in this case on March 5, 2010 and in reply to the Examiner's Answer notified July 22, 2010.

This brief contains these items under the following headings, and in the order set forth below (M.P.E.P. § 1208):

- I. STATUS OF CLAIMS
- II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL
- III. ARGUMENTS
- IV. CONCLUSION

The final page of this brief bears the practitioner's signature.

I. STATUS OF CLAIMS

The status of the claims in this application are:

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 38

B. STATUS OF ALL THE CLAIMS

1. Claims cancelled: 7 and 36
2. Claims withdrawn from consideration but not cancelled: 10-29
3. Claims objected to: none
4. Claims allowed or confirmed: none
5. Claims rejected: 1-6, 8, 9, 30-35, 37 and 38

C. CLAIMS ON APPEAL

The claims on appeal are: 1-6, 8, 9, 30-35, 37 and 38.

II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 1-6, 8, 9, 30-35, 37 and 38 are unpatentable under 35 U.S.C. §103(a) as being anticipated by the teachings of US 2001/0024755 to Bahar.

B. Whether claims 1-6, 8, 9, 30-35, 37 and 38 are unpatentable under 35 U.S.C. §103(a) as being obvious over the teachings of US 2001/0024755 to Bahar.

III. ARGUMENTS

A. Rejection for Anticipation is Improperly Based on Conjecture.

The rejection for anticipation merely contends that it is possible that Bahar could have an acid component in the claimed percentage range. However, possibilities are insufficient to sustain a rejection for anticipation.

1. Claims 1-6, 8, 9, 30-35, 37 and 38 are not anticipated.

The Examiner's Answer contends that the claim recitation of about 5 to about 90 wt-% acid in the composition is anticipated by inherency. However, the contention is only supported by conjecture and is therefore improper.

The Examiner's Answer acknowledges that "the reference does not explicitly teach the weight percents, it inherently possesses a weight percent within the claimed range." Examiner's Answer (EA) at 6. "Anticipation by inherent disclosure is appropriate only when the reference discloses prior art that must *necessarily* include the unstated limitation." *TRANSCLEAN CORP. V. BRIDGEWOOD SERVICES INC.*, 62 U.S.P.Q.2d 1865, 1871 (Fed. Cir. 2002) (emphasis in original). Appellants submit that Bahar does not necessarily include the unstated acid percentage claimed range of about 5 to about 90 wt-%. The rejection is only based on conjecture, which is not sufficient to establish anticipation by inherency.

The Examiner's Answer asserts many instances of conjecture to contend acid is provided in the polymeric sheet of Bahar in the claimed range. Essentially, the rejection contends that acid is provided in the pores of a polymeric sheet whose porosity is preferably 70% and up to 90%; therefore, the acid is at least 30 wt-% of the polymeric sheet. The Examiner's Answer acknowledges that the claimed weight percent is not the same as volume percent, but baldly asserts that the densities would be "close enough" to assume equivalence. EA at 6, line 13. "Close enough" does not meet the standard that Bahar must necessarily include the unstated claimed acid percentage to be inherently anticipatory. See, *TRANSCLEAN*, AT 1871.

The Appeal Brief also explained that Bahar teaches to place the electrolyte into the pores in a solution and then removing the solvent. Appeal Brief (AB) at 10 citing Bahar, paragraph 0091, lines 1-4. The electrolyte is deemed the acid component in this context by the rejection. Hence, the pore volume would not be filled with the acid component according to Bahar but would be filled to some extent with the acid component and solvent in solution. Bahar does not teach the acid concentration of the solution. The Examiner's Answer just speculates that even in solution, the acid would be expected to provide more than about 5 wt-%. EA at 6, lines 16-17. No basis other than speculation is given for this statement. But speculation does not meet the standard for inherency. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." MPEP § 2112 IV (emphasis original), citing *IN RE RIJCKAERT*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Bahar also does not teach how much of the acid in solution actually is held in the pores of the polymeric sheet. Independent claims 1 and 30 require the acid to be held by the polymer. No teaching in Bahar states that all of the acid in solution is retained in the pores. Bahar does, however, teach in Example 4 that the membrane was imbibed with ion exchange resin and followed by drying three times indicating perhaps that not all of the acid component is held by the membrane upon a single imbibing. In this context, the ionic exchange resin is considered the acid component according to the rejection. Appellants respectfully assert that the acid concentration would not equate to the porosity of the polymeric sheet of Bahar.

The Examiner's Answer refers to Example 4 of Bahar which refers to a membrane imbibed with a 9 wt-% solution of ion exchange resin in ethanol. The example does not indicate the porosity of the membrane. The example also does not say how much of the ion exchange resin actually is retained in the pores although three imbibings and dryings were performed indicating meager retention. Example 4 does not give enough information to indicate the percentage of acid held in the membrane.

The Examiner's Answer further calculates an acid concentration of 8.5 wt-% from an ion exchange solution of 9 wt-% perfluorosulfonic acid from Example 4 and a membrane with 95% porosity. However, Bahar does teach or suggest anywhere matching the highest porosity

in the porosity range stated in the application with the 9 wt-% ion exchange solution. Furthermore, Bahar does not teach how much of the ion exchange resin is actually held by the membrane. The amount of acid held by the membrane would be expected to be low for a membrane with 95% porosity. Per the interpretation of porosity of the rejection, porosity appears to be the volume of pores in the membrane relative to the volume of the membrane. A porosity of 95% would indicate 5% membrane and 95% pores by volume. Such a threadbare membrane would not be expected to retain or hold much of the ion exchange resin. Example 4 leaves many questions unanswered. Appellants respectfully submit that Example 4 of Bahar does not necessarily include a percentage of about 5 to about 90 wt-% of acid.

The Examiner's Answer also asserts that perhalosulfonic acid would be expected to be more dense due to heteroatoms present, presumably than the membrane in Example 4. EA at 7, lines 4-7. However, the membrane of PTFE, polytetrafluoroethylene, in Example 4, line 1 also includes heteroatoms which betray the lack of support for the contention.

The volume of the pores in Bahar are also further reduced in volume because the membrane is covered with a functional material. Paragraph 0018. When metal oxide is used as the functional coating material, it may decrease the void volume to as low as 50% of the initial molding. Bahar, paragraph 0087, last sentence. Accordingly, since the actual pore volume available to the acid solution is less than the membrane pore volume even less acid will be held in the pores of Bahar.

Bahar provides only generic relevance to the subject claims. Many variables are open in the Bahar reference. Among these variables are void volume, concentration of the acid solution, voidage lost due to coverage with the functional material, and degree of acid retained on the membrane. All of these variables would have to come out just right to make possible an acid concentration of about 5 to about 90 wt-% as recited in independent claims 1 and 30. "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." MPEP § 2112 IV, citing *IN RE ROBERTSON*, 49 USPQ.2d 1949, 1950-51 (Fed. Cir. 1999). The Examiner's Answer only establishes that it is possible that Bahar includes the claimed acid

concentration, which is insufficient to support inherency. Appellants respectfully assert that anticipation of claims 1-6, 8, 9, 30-35, 37 and 38 has not been established.

2. Claims 8 and 37 are not anticipated.

The Examiner's Answer contends that the recitation in claims 8 and 37 of about 30 to about 85 wt-% acid in the composition is anticipated by inherency. This contention is also only supported by conjecture. Moreover, the possibility of inherency, which is insufficient to establish inherency, is also less likely.

The rejection relies on many suppositions which stretches Bahar to approach about 5 wt-% acid in claims 1, 30 and dependents. No case of suppositions can be credibly pieced together to stretch Bahar to approach about 30 wt-% acid in the composition.

The Examiner's Answer relies on two statements to allege inherency of about 30 to about 85 wt-% acid in the composition. The first statement in the Examiner's Answer is, "[p]referably the interior volume of the sheet is substantially occluded by the electrolyte." Examiner's Answer at 7, citing paragraph 0093, last sentence. The preceding sentence in Bahar indicates that space between the nodes and fibrils of the composition is filled with electrolyte, so no air can flow through. Bahar, paragraph 0093, penultimate sentence. However, these statements do not indicate the relative weight proportions of the composition, but just that a thin continuous film traverses the membrane to occlude air from flowing through. The thickness of the functional film relative to the membrane is not given in Bahar. Also, no indication is given that as much as 30 wt-% acid is present in the membrane.

The second statement relied on in the Examiner's Answer to support inherency of the about 30 to about 85 wt-% acid is the statement from claim 19 in Bahar, "that the porous structure is substantially filled with a polymer composition." However, claim 19 does not indicate how much of the polymer composition is an electrolyte; i.e., the acid component in the rejection. Claim 19 does not reach to 30 wt-% acid without further speculation.

3. Claims 9 and 38 are not anticipated.

The Examiner's Answer contends that the claim recitation of about 50 to about 80 wt-% acid in the composition is anticipated by inherency. For the same reasons in claims 1-6, 8 and 9 and 30-35, 38 and 38, Appellants assert this contention is also only supported by conjecture. Moreover, the Examiner's Answer has pieced together no series of suppositions to sufficiently stretch Bahar to approach a composition of at least half acid.

Believing Appellants have respectfully shown that the rejection for anticipation is improper, Appellants now turn to the newly entered rejection for obviousness.

B. Rejection for Obviousness is Also Improperly Based on Conjecture.

The Examiner's Answer raised a new ground of rejection on appeal. Claims 1-6, 8, 9, 30-35, 37 and 38 were rejected as obvious under 35 U.S.C. § 103(a) over Bahar. Appellants traverse the rejection and elect to address the obviousness rejection while maintaining the appeal.

The obviousness rejection alleges that the claimed acid percentages and pourability would have been determined by routine experimentation. However, Bahar does not suggest these limitations.

1. Claims 1-6, 8, 9, 30-35, 37 and 38 are not obvious.

The Examiner's Answer contends that claims 1-6, 8 and 9 are obvious over Bahar because the amount of acid would have been determined by routine experimentation. Because there is no factual basis for supposing that routine experimentation would have arrived at the claimed acid proportion, Appellants traverse the rejection as improper.

"Obviousness can be established by ... modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *IN RE KAHN*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) (discussing rationale underlying the motivation-suggestion-teaching test as a guard against using hindsight in an obviousness analysis)." MPEP § 2143.01 I. No teaching, suggestion or motivation is provided in Bahar that points to an acid percentage in the claimed range.

The Examiner's Answer states that,

if the amount of the acid component is not necessarily inherent as has been argued by the examiner, then the optimal amount of acid component would have been determined through routine experimentation in the art in an effort to improve the composition taking into account factors such as if not enough acid component is used, then there may be a lack of the desired activity, and conversely if too much acid is used then the selectivity may be decreased and the cost increased as more than the optimal amount of catalyst (i.e. acid component) is used.

Answer at page 5, third paragraph.

Appellants respectfully submit that the obviousness rejection suffers from the same defect as the anticipation rejection. Only speculation is used to link the teachings of Bahar to the subject claims. There is no evidence or reasoning provided in the obviousness rejection to establish that the optimal amount of acid component in Bahar would be in the ranges claimed in Appellants' application. Even if only routine experimentation is required to make the determination, no evidence or reasoning even suggests that the optimal acid concentration of the composition of Bahar would be in the range of about 5 to about 90 wt-% recited in claims 1-6 and 30-35. No evidence or reasoning suggests the optimal acid concentration of Bahar would be in the tightened ranges claimed in claims 8, 9, 37 and 38. Even less likely would the optimal acid concentration be in the range of about 30 to about 85 wt-% in claims 8 and 37. Even further unlikely is it that the optimal acid concentration would be found to be about 50 to about 80 wt-% as in claims 9 and 38 would be optimal.

High acid concentration is necessary in the subject composition for it to be useful as a catalyst in an intended hydrocarbon alkylation process. See application at paragraph 0005. No teaching or suggestion of acid concentration is provided by Bahar. Without a teaching, a suggestion or other reasoning in the prior art pointing to a particular acid concentration, just hindsight speculation is left. However, hindsight speculation cannot support an obviousness rejection. See, KAHN at 1335. Appellants respectfully submit that a prima facie case of obviousness of claims 1-6, 8, 9, 30-35, 37 and 38 has not been made.

2. Claims 30-35, 37 and 38 are not obvious.

The Examiner's Answer contends that giving Bahar its broadest reasonable interpretation, it would have been obvious to make the composition of Bahar in pourable form. Because the membrane of Bahar is not intended for pouring, Appellants respectfully submit that it is unreasonable to interpret Bahar's membrane as subject to pouring.

The Examiner's Answer contends one of ordinary skill in the art would have found it obvious to have the composition in "pourable" form depending on the desired use, such as for loading into a reaction column or a chemical reactor, where one would expect that the catalyst product would need to be added (i.e. poured) to a reaction column or chemical reactor for use in catalytic conversions. Appellants respectfully submit that it is not reasonable to pour the apparatus of Bahar into a column or a reactor.

The use given for the Bahar device in paragraph 0104 of the application requires a casing 7, two positive electrodes films 2, 3, two negative electrode films 4, 5 sandwiching the membrane 1 of Bahar. One of each positive and negative electrodes 2, 4 are presumably connected to an electrical circuit for generation or storage of electricity. Appellants respectfully submit that all applications of Bahar's membrane will have to be connected to an electrical circuit or positioned carefully so as to allow its electrochemical effects to be properly harnessed. Membrane devices can never be poured into an application and expected to operate effectively. Membrane devices are always placed into service to position the electrodes and/or membrane surface properly. Appellants respectfully submit that such a device is not amenable to being poured haphazardly into a column or a reactor.

Appellants respectfully submit that recitation of "pourable" in claims 30-35, 37 and 38 would not have been obvious from the teachings of Bahar. Accordingly, a *prima facie* case of obviousness has not been made for these claims.

Appellants respectfully request reversal of the rejections for obviousness.

IV. CONCLUSION

Appellants respectfully submit that *prima facie* cases of anticipation and obviousness have not been made. Failing to establish a *prima facie* case of anticipation and obviousness,

Appellants respectfully request that the final rejection be reversed and claims 1-6, 8, 9, 30-35, 37 and 38 be allowed.

Respectfully submitted,

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